**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions and listings of claims in this application.

1. (PREVIOUSLY PRESENTED) A method comprising:

illuminating a first surface of a wafer with radiation from a radiation source, wherein a second surface of the wafer opposite the first surface is positioned on a reflective support, the reflective support being a separate element from the wafer being illuminated;

receiving a signal that includes information germane to total reflectance of the radiation from the wafer;

comparing the information to information in a database; and

determining one or more characteristics of the wafer based on the comparing wherein the one or more characteristics are selected from a group consisting of thickness and surface characteristics.

2. (ORIGINAL) The method of claim 1 wherein the database includes calculated information.

3. (ORIGINAL) The method of claim 1 wherein the database includes measured information.

4. (ORIGINAL) The method of claim 1 wherein the signal includes spectral information.

5. (ORIGINAL) The method of claim 1 wherein the database includes spectral information.

6. (ORIGINAL) The method of claim 1 wherein the database includes calculated spectral information.

7. (ORIGINAL) The method of claim 1 wherein the signal includes spectral information and further comprising selecting segments of the spectral information.

8. (ORIGINAL) The method of claim 1 wherein the database includes spectral information for a variety of wafer thicknesses.

9. (ORIGINAL) The method of claim 1 wherein the database includes spectral information for a variety of wafer surface characteristics.

10. (ORIGINAL) The method of claim 1 wherein the database includes spectral information for a variety of wafer thicknesses and a variety of wafer surface characteristics.

11. (ORIGINAL) The method of claim 1 wherein the signal is acquired using a non-contact technique.

12. (ORIGINAL) The method of claim 1 wherein the signal is acquired using an optical technique.

13. (ORIGINAL) The method of claim 1 wherein the signal is acquired using a non-contact, optical technique.

14. (ORIGINAL) The method of claim 1 wherein the receiving, the comparing and the determining occur in less than approximately 100 ms.

15. (ORIGINAL) The method of claim 1 wherein the determining comprises mapping characteristics of the wafer.

16. (ORIGINAL) The method of claim 1 wherein the one or more characteristics includes thickness of the wafer.

17. (ORIGINAL) The method of claim 1 wherein the one or more characteristics includes surface roughness of the wafer.

18. (ORIGINAL) The method of claim 1 wherein the signal is acquired using a Sopori reflectometer.

19. (ORIGINAL) The method of claim 1 wherein the signal is acquired using a PV reflectometer.

20. (ORIGINAL) The method of claim 1 wherein the surface characteristics of the wafer are known a priori.

21. (ORIGINAL) The method of claim 1 wherein the signal includes information pertaining to one or more surfaces of the wafer.

22. (ORIGINAL) The method of claim 1 wherein the signal includes information pertaining to one or more surfaces of the wafer and to one or more thicknesses of the wafer.

23. (ORIGINAL) The method of claim 1 wherein the wafer filters shorter wavelengths of incident radiation.

24. (ORIGINAL) The method of claim 1 wherein the comparing includes performing a regression analysis.

25. (ORIGINAL) The method of claim 24 wherein the performing a regression analysis yields a best fit.

26. (ORIGINAL) The method of claim 1 wherein the comparing includes selecting a total reflectance value and correlating the selected value to a wavelength.

27. (ORIGINAL) The method of claim 1 wherein the comparing includes selecting a total reflectance value and correlating the selected value to a wavelength within a range of wavelengths.

28. (ORIGINAL) The method of claim 27 wherein the range of wavelengths corresponds to a range associated with multiple internal reflections in the wafer.

29. (ORIGINAL) The method of claim 1 wherein the comparing includes comparing wavelengths.

30. (ORIGINAL) The method of claim 1 wherein the comparing includes comparing reflectances.

31. (ORIGINAL) The method of claim 1 wherein the comparing includes comparing wavelengths and reflectances.

32. (ORIGINAL) The method of claim 1 wherein the comparing includes selecting a total reflectance value.

33. (ORIGINAL) The method of claim 1 further comprising acquiring the signal.

34. (ORIGINAL) The method of claim 33 wherein the acquiring includes spectral acquisition.

CLAIMS 35 and 36 (CANCELED)

37. (ORIGINAL) The method of claim 33 wherein the acquiring includes positioning a narrow-band filter between the wafer and a detector to filter radiation emanating from the wafer.

38. (ORIGINAL) The method of claim 37 wherein the detector detects radiation having amplitude inversely proportional to thickness of the wafer.

39. (ORIGINAL) The method of claim 1 further comprising generating an image of the wafer.

40. (ORIGINAL) The method of claim 1 wherein the signal is acquired using a reciprocal approach.

CLAIMS 41-58 (CANCELED)

59. (PREVIOUSLY PRESENTED) A method comprising:

positioning a thin wafer on a support, wherein the support has a layer of reflecting material abutting a lower surface of the thin wafer;

identifying for the thin wafer a moderately absorbing region of wavelengths of radiation;

using a reflectometer to illuminate an upper surface of the thin wafer with radiation having one or more wavelengths corresponding to the moderately absorbing region;

measuring total reflectance of the thin wafer; and

comparing the total reflectance to reflectance information for a plurality of wafers stored in a database in memory; and

determining a thickness of the thin wafer based on the comparing.

60. (CANCELED)

61. (PREVIOUSLY PRESENTED) The method of claim 59, wherein the reflective support is an aluminum reflecting support.

62. (CANCELED)

63. (PREVIOUSLY PRESENTED) The method of claim 59, wherein the reflectometer comprises two or more radiation sources and wherein substantially all of the surface of the thin wafer is illuminated.

64. (PREVIOUSLY PRESENTED) A method of determining characteristics of a wafer, comprising:

illuminating the wafer with radiation from one or more radiation sources, whereby substantially all of an upper external surface of the wafer is illuminated, wherein the wafer is positioned with a lower external surface abutting a reflecting surface of a support platform that is a separate component from the wafer;

measuring a reflectance of the radiation from the wafer, wherein the illuminating and measuring are performed without contacting the upper external surface;

comparing the reflectance to reflectance information stored for a plurality of wafers in memory;

determining at least one of thickness of the wafer and surface characteristics of the wafer based on the comparing, wherein the comparing includes selecting a total reflectance value and correlating the selected value to a wavelength within a range of wavelengths.

65. (CANCELED)

66. (PREVIOUSLY PRESENTED) The method of claim 64, wherein the range of wavelengths is selected to correspond with a region of moderate absorbancy of radiation for the wafer.

67. (PREVIOUSLY PRESENTED) The method of claim 1, wherein the illuminating is performed using radiation at a wavelength corresponding to a moderately absorbing region of the wafer.